

NEW SPECIES OF TRINOTON NITZSCH (MALLOPHAGA, INSECTA)

THERESA CLAY

British Museum (Natural History)

The three new species of *Trinoton* described below are parasitic on species of the genus *Dendrocygna* (Anseriformes). It was shown in Clay and Hopkins (1960, p. 21) that *Trinoton aculeatum* Piaget, 1885 from *Dendrocygna viduata*, the only previously described species from this duck genus, differed from all other known species of *Trinoton* by having numerous spine-like setae on the pronotum; these new species also have this character. Specimens of *Trinoton* have been seen from all the species of *Dendrocygna* listed in Peters (1931) with the exception of *D. guttata*. The populations parasitic on *Dendrocygna bicolor*, *D. arborea*, and *D. autumnalis discolor* appear to be conspecific with *Trinoton aculeatum* from *Dendrocygna viduata*, while those parasitic on *D. javanica*, *D. arcuata*, and *D. eytoni* can each be treated as a distinct species.

The homologies of the sclerites of the external male genitalia of *Trinoton* are not clear, being twisted and superimposed on each other. However, in one specimen the genitalia have been flattened out, as shown in figure 2, and if compared with a simple type of genitalia such as those of *Myrsidea* it seems that the sclerites may be interpreted as follows (see Clay (1956) for terminology): there is a long narrow basal apodeme (*b*) (figures 2-3) which divides into two sclerites, the distal portions of which can be considered as the parameres which are continuous with the basal apodeme without articulation. The right paramere (*pr*) passes distally to the base of the whole apparatus and is swollen to a lesser or greater extent (figures 3-6); there are three to four placoids (Clay, 1961, p. 45) on the swollen portion. The left paramere (*pl*) has an irregular, rather indistinct termination at the proximal end of the endomeral plate, where it is contiguous with a lateral sclerite of this plate. The endomeral plate (*e*), which in the flattened specimen appears similar to that of other Menoponidae, is asymmetrical and normally bent back on itself. The genital sac contains a complicated group of sclerites (Plate 11, figures 1-3), which is distinct in each species, but which may be difficult to compare due to the individual differences caused by the position in which the sclerites lie in the mounted specimens (Plate 11, figures 1-2). In the genital sac of all four species there is a small sclerotised protuberance (*s*) which bears three placoids. The males of the species discussed in this paper are most easily separated by the shape of the enlarged end of the right paramere and the characters of the sclerites of the genital sac.



Figure 1. *Trinoton emersoni* sp. nov., male.

In the females the three new species differ from *aculeatum* in the shape of the last segment; in the latter species this is narrower with a rounded posterior margin, and in the other species broader with a flattened posterior margin (figures 10–11). Each side of sternite VIII in the new species there are a number of stout spine-like setae, which in *aculeatum* are absent or represented by one to three shorter and finer spine-like setae. The thickening in the dorsal wall of the genital chamber which projects below the vula (Plate 11, figure 4), the form of which is diagnostic for some species of *Trinoton* (Clay and Hopkins, 1960, p. 22), appears to be similar in the three new species, but the material is not really adequate to be certain of this. The female of *Trinoton fluviatile* sp. nov. can be distinguished from the other species by the characters of the chaetotaxy; it seems doubtful whether *T. emersoni* sp. nov. and *T. laveryi* sp. nov. can be distinguished in the female.

There is individual variation in measurements of these species, and this is reflected in the shape of the head, which may appear somewhat different in different specimens. The measurements of total length and length and breadth of the abdomen are unreliable in mounted specimens. There do not seem to be any significant differences in the size of the three new species and measurements are given for a male and female of *T. emersoni* only.

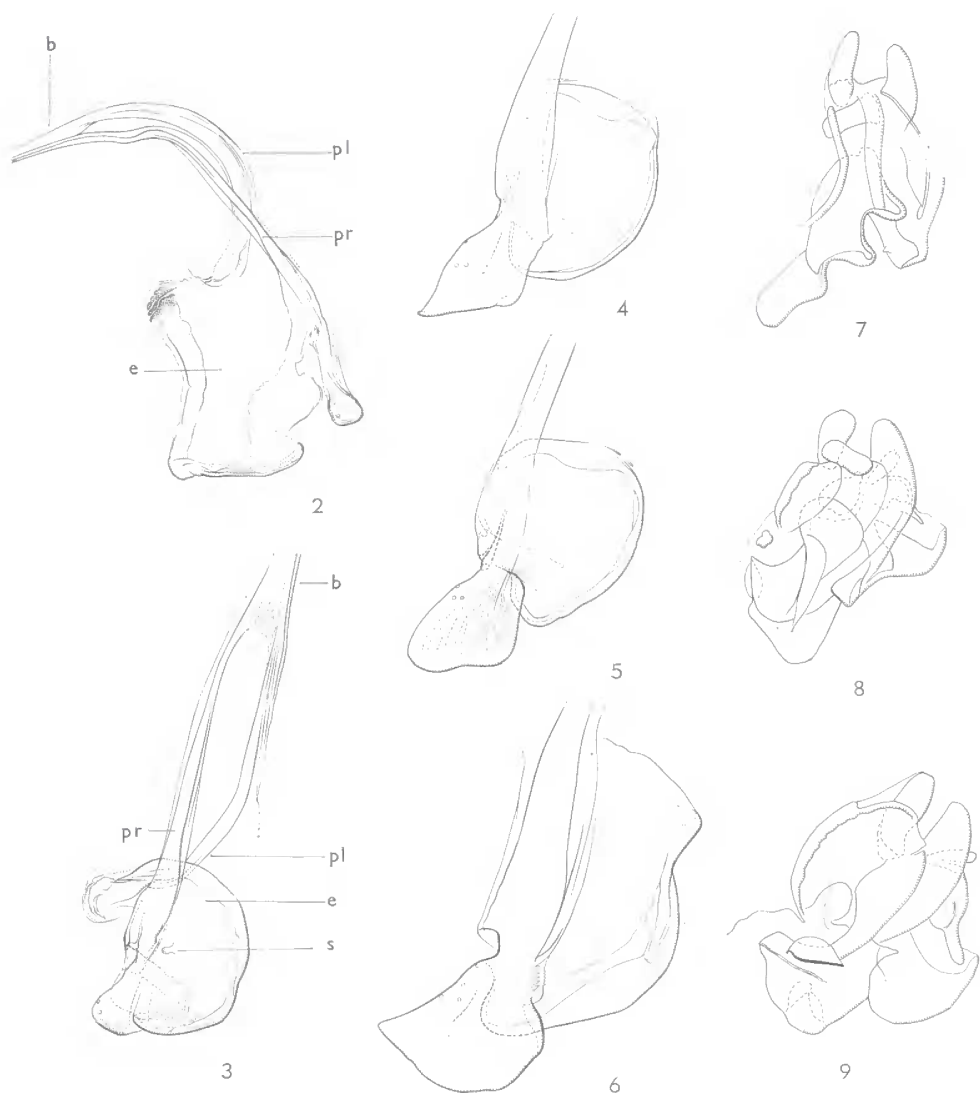
TRINOTON EMERSONI sp. nov.

Plate 9, figure 1; plate 10, figure 1; plate 11, figures 1, 2; figures 1, 4, 11.

Male as shown in figure 1, with the brushes of setae on sternites IV and V as in plate 9, figure 1, and plate 10, figure 1. The swollen end of the right paramere is similar in size to that of *laveryi*, but more pointed (figure 4), and the sclerites of the genital sac differ as shown in plate 11, figures 1–2. The female resembles the male in the chaetotaxy of the head, thorax, and abdominal terga I–VIII and sterna I–VII; shape of terminal segment of the abdomen as in figure 11. Measurements of a male and female and of the breadth of the gular patch of setae are given below.

Type host.—*Dendrocynna javanica* (Horsfield).

This species is most similar to *laveryi*. In the male it can be distinguished from this and all other known species by the form of the right paramere and sclerites of the genital sac; in the female it can be distinguished from *aculeatum* by the shape of the last segment of the abdomen and the chaetotaxy of the femoral and sternal brushes, and from *fluviatile* by this last character and by the chaetotaxy of the gular region. On the available material it has not been found possible to distinguish the females of this species from those of *laveryi*.



Arthur Smith del.

Figures 2-3. *Trinoton aculeatum* Piaget, male genitalia. 2, structure in flattened position, from *Dendrocygna bicolor* (Vieillot); 3, structure in normal position, from *Dendrocygna viduata* (Linn.). *b*, basal apodeme; *pr*, right paramere; *pl*, left paramere; *e*, endomerical plate; *s*, protuberance in sac.

Figures 4-6. *Trinoton* spp., right paramere and endomerical plate. 4, *T. emersoni* sp. nov.; 5, *T. laveryi* sp. nov.; 6, *T. fluviatile* sp. nov.

Figures 7-9. *Trinoton* spp., sclerites of genital sac. 7, *T. aculeatum* Piaget; 8, *T. laveryi* sp. nov.; 9, *T. fluviatile* sp. nov.

MATERIAL.—Holotype (male on slide, No. 683), in the British Museum (Nat. Hist.), from *Dendrocygna javanica* (Horsfield), Ceylon, 15.xi.1953. Paratypes from the type host species: three males, Ceylon, 15.xi.1953 (W.W.A. Phillips), B.M. (Nat. Hist.); one male, Mysore, xi.1939 (R. Meinertzhagen), B.M. (Nat. Hist.); six males, four females, Thailand, 22.i.1953 and 12.xi.1953 (R. E. Elbel), K. C. Emerson Collection.

This species is named in honour of Dr. K. C. Emerson, in gratitude for the loan of specimens of this species and much other material.

TRINOTON LAVERYI sp. nov.

Plate 9, figure 2; plate 10, figure 2; figures 5, 8.

The chaetotaxy shows no constant differences from that of *emersoni* (figure 1; plate 9, figure 2; and plate 10, figure 2). The swollen end of the right paramere (figure 5) is smaller than that of *fluviatile* and more pointed than that of *emersoni*; the sclerites of the genital sac (figure 8) differ from both these species. The breadth of the gular patch is shown below.

Type host.—*Dendrocygna arcuata* (Horsfield).

This species is distinguished from *aculeatum* and *fluviatile* by having fewer setae in the femoral and sternal brushes, and from *emersoni* and the two former species by the shape of the right paramere and the sclerites of the genital sac. It has not been possible to separate the females from those of *emersoni*, but they can be distinguished from the other species by the same characters as given above for *emersoni*.

MATERIAL.—Holotype (male, T. 6078) in the Queensland Museum, Brisbane, from *Dendrocygna arcuata* (Horsfield), Townsville, N.E. Queensland, 4.iv.1960 (H. J. Lavery). Paratypes (four males, five females), from the type host species and the type locality, 1959–1960 (H. J. Lavery).

This species is named in honour of Mr. H. J. Lavery of the Department of Agriculture and Stock, Queensland, who collected the specimens of this and the following species.

TRINOTON FLUVIATILE sp. nov.

Plate 9, figure 4; plate 10, figure 4; plate 11, figures 3–4; figures 6, 9.

The chaetotaxy differs from that of *emersoni* (figure 1) in the greater number of setae in the femoral and sternal brushes (plate 9, figure 4; plate 10, figure 4) and in the smaller number of setae on the gular region and pronotum. The patch of gular setae is narrower (see below), and there are 25–30 setae each side, in total not more than 63 in any of the three males examined.

The number of pronotal setae range from 23-27 each side, and do not total more than 58 in any of the three males. The single female resembles the male in the chaetotaxy of these regions, but has rather more setae: the gular setae number 31 and 34, and the pronotal setae 28 and 30. In the male genitalia the right paramere shows the largest terminal enlargement of the four species and the endomeral plate is larger, more heavily sclerotised, and differs in shape (figure 6). The genital sclerites of the genital sac are also larger and more heavily sclerotised (plate 11, figure 3; figure 9).

Type host.—*Dendrocygna eytoni* (Eyton).

This species is distinguished from the two preceding species by the chaetotaxy of the femoral and sternal brushes, and from these species and *aculeatum* by the characters of the gular and pronotal chaetotaxy and the male genitalia.

MATERIAL.—Holotype (male, T. 6079), and Allotype (female, T. 6080), in the Queensland Museum, Brisbane, from *Dendrocygna eytoni* (Eyton), Brandon, N.E. Queensland, 29.ix.1960 (H. J. Lavery). Paratypes (two males) from the type host species and the type locality, 1958-1960 (H. J. Lavery).



10



11

Figures 10-11. *Trinoton* spp., terminal segment of female abdomen. 10, *T. aculeatum* Piaget; 11, *T. emersoni* sp. nov.

MEASUREMENTS (mm.)

Trinoton emersoni

	Male			Female	
	Length	Breadth		Length	Breadth
Head ¹	0.88	1.08	.....	0.85	1.05
.....			
Head ²		1.40	.....		1.37
Prothorax		1.19	.....		1.15
Metathorax.....		1.65	.....		1.62
Abdomen	3.23	1.76	.....	3.38	1.74
Total	5.95		.....	6.12	

Species	Male		Female	
	Breadth of Head ²	Breadth of Gular Patch	Breadth of Head ²	Breadth of Gular Patch
<i>T. aculeatum</i>	1.37	0.44	1.43	0.43
<i>T. emersoni</i>	1.40	0.48	1.37	0.43
<i>T. laveryi</i>	1.40	0.39	1.38	0.40
<i>T. fluviatile</i>	1.35	0.20	1.40	0.23

¹ At preocular enlargement.

² At temples.

LITERATURE CITED

- Clay, T., 1956. Phthiraptera in Tuxen, 1956. Taxonomist's Glossary of Genitalia in Insects, Copenhagen, pp. 145-148.
- , 1961. Three new species of Mallophaga (Insecta). *Bull. Brit. Mus. (Nat. Hist.) Ent.*, 11, pp. 45-58.
- Clay, T., and Hopkins, G. H. E., 1960. The Early Literature on Mallophaga. Pt. IV. *Bull. Brit. Mus. (Nat. Hist.) Ent.*, 9, pp. 3-61.
- Peters, J. L., 1931. Check-list of Birds of the World. Harvard University Press, Cambridge, 1, xviii + 345 pp.

EXPLANATION OF PLATES

Plate IX

- Fig. 1. *Trinoton emersoni* sp. nov. sternal brush of segment IV of male abdomen.
- Fig. 2. *Trinoton laveryi* sp. nov. sternal brush of segment IV of male abdomen.
- Fig. 3. *Trinoton aculeatum* Piaget sternal brush of segment IV of male abdomen.
- Fig. 4. *Trinoton fluviatile* sp. nov. sternal brush of segment IV of male abdomen.

Plate X

- Fig. 1. *Trinoton emersoni* sp. nov., sternal brushes of segment V of male abdomen.
- Fig. 2. *Trinoton laveryi* sp. nov., sternal brushes of segment V of male abdomen.
- Fig. 3. *Trinoton aculeatum* Piaget, sternal brushes of segment V of male abdomen.
- Fig. 4. *Trinoton fluviatile* sp. nov., sternal brushes of segment V of male abdomen.

Plate XI

- Fig. 1. *Trinoton emersoni* sp. nov., sclerites of genital sac of male.
- Fig. 2. *Trinoton emersoni* sp. nov., sclerites of genital sac of male, from another specimen.
- Fig. 3. *Trinoton fluviatile* sp. nov., sclerites of genital sac of male.
- Fig. 4. *Trinoton fluviatile* sp. nov., female genital region.